

upon many of the steep slopes is termed "Fynbosch" and described as a sclerophyllous formation comparable to the chaparral of the United States. It is dominated by shrubs with needle and ericoid leaves, conspicuous among which are the genera *Cliffortia* (Rosaceae) and *Erica*, both represented by several species, and a large number of woody Compositae. In its undergrowth, bulbous plants abound. From it BEWS traces a double succession, one to the "bush" or forest, in which *Podocarpus* spp. and *Celtis Kraussiana* are the most abundant trees, the other to the mountain veld. The former is clearly leading to the climax type of tree vegetation developing only under the most favorable conditions of soil and exposure; but the succession in the latter instance does not seem clear, for the veld is apparently more xerophytic, although more extensive than the "Fynbosch."—GEO. D. FULLER.

Germination of tree seeds.—BOERKER³⁴ has carried on three series of greenhouse cultures to determine the effect of light, soil moisture, and soil texture upon the germination of the seeds of various forest trees. The cultures were extensive and the environmental factors rather carefully controlled. The variations in response are too numerous to be touched upon in a review, but some items of the summary show that it has not been possible to isolate the effect of single factors, as it is stated that shade accelerates germination and this acceleration is due to increase in soil moisture caused by decreased evaporation and transpiration. On the other hand, light is found to play absolutely no part in the germination of tree seeds. Similarly, the differentiation between the effects of soil moisture and soil texture has not been accomplished.

The reaction of different tree species to the different sets of conditions is interesting, and the results should be of practical service to foresters. The increase of length of tap and lateral roots in *Pinus ponderosa* with diminishing soil moisture content may be cited as one of the results. *P. ponderosa* growing in the Rocky Mountains produces smaller seeds that germinate more quickly than those from the same species grown upon the Pacific coast. Similar differences were found for local varieties of *Pseudotsuga taxifolia*; while in both species large seeds proved superior to small, both in higher germination percentage and in the size of the seedlings.—GEO. D. FULLER.

Law of the minimum.—HOOKER³⁵ gives an interesting discussion on the application of the law of the minimum, or limiting factors, to biological problems. He is perhaps fortunate, in so far as rigid application of the law is concerned, in drawing his early illustrations from simple chemical and physical processes, for it is rapidly becoming a question whether the law applies to plant

³⁴ BOERKER, R. H., Ecological investigations upon the germination and early growth of forest trees. 8vo. pp. 89. pls. 5. Thesis Univ. Nebraska. 1916.

³⁵ HOOKER, D. H., Liebig's law of the minimum in relation to general biological problems. Science N.S. 46:197-204. 1917.